THE ROLE OF OBJECT-ORIENTED PROGRAMMING IN THE SYSTEM OF PROFESSIONAL TRAINING FOR A BACHELOR'S DEGREE IN COMPUTER SCIENCE

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ABSTRACT

The pace of scientific and technological progress as well as the introduction of modern information technologies in various spheres of human life and professional activity lead to the urging necessity to improve the system of training of the specialists in the field of information systems and corresponding technologies. In Ukraine, such training at the level of higher education is carried out in groups of specialties and directions "Information technology", in particular in the specialty "Computer science" (CS).

According to existing standards, a bachelor of the specialty "Computer Science" must possess fundamental knowledge, professional skills and corresponding qualification, experience in creative and research activities as well as in solving professional problems. These tasks, in particular, include the following: the development of projects for the automation and informatization of applied processes, including creation of appropriate information systems. The project activity of the bachelor of the specialty "Computer Science" involves the development, implementation and adaptation of applied software, programming applications in the development of information systems (IS). Thus, it attracts attention to the need to improve the training of CS bachelors in the field of programming, creation of applications and software using modern approaches and professional instrumental environments.

In order to identify the elements of professional competence of CS bachelors related to the tasks of development, implementation and adaptation of applied software, programming applications in the development of ISs, we must describe the components of above-mentioned competence while analyzing the standard of the specialty, as well as verifying the use of modern ideas of the competence-based approach, implying understanding of the need for the formation of knowledge, skills and particular personal qualities of students at a bachelor's degree associated with the most advanced modern technologies and means of designing and developing applied computer software.

In the standard of higher education of Ukraine of the first (bachelor's) level, sphere of knowledge 12 "Information technologies", specialty "Computer Sciences", there is a number of competencies that can be formed in the process of studying object-oriented programming:

- **general competences**:
- the ability to perform abstract thinking, conduct analysis and synthesis;
- the ability to use knowledge in practical situations;
- possession of knowledge and understanding of the subject area and professional activities;
- the ability to learn and master modern knowledge;
- the ability to generate new ideas (creativity).
- **special competencies**:
- the ability to think logically, build logical conclusions;
- the ability to use formal languages and models of algorithmic computations;
- ability to design, develop and analyze algorithms, assess their effectiveness and complexity;
- ability to identify decidability or undecidability of algorithmic problems for adequate modeling of subject areas and the creation of software and information systems.
- the ability to design and develop software using various programming paradigms: generalized, object-oriented, functional, logical, with appropriate models, methods and algorithms of calculations, data structures and control mechanisms.

After conducting the analysis of modern approaches to the development of computer software, we consider it necessary to exploit the object-oriented programming. This direction is the most

popular and promising in the practice of programming, for it allows to design and create software at a high level of abstraction and contributes to the formation of the object-oriented style of algorithmic thinking, which is identified as a a programming methodology that enables the professional to represent formalized solutions due to the conceptual unity of the terminological base and a small number of basic constructs. At the same time, teaching object-oriented programming requires the development of special techniques, since it combines the need to master a special methodology, as well as modern languages and development tools that ensure the implementation of an object-oriented approach.

Summing up all the results presented in the article, we can conclude that the competence of a CS bachelor in the field of object-oriented programming presupposes a high level of generalized professional knowledge, a willingness to develop computer applications in the process of solving professional problems. This competence is an integral part of the core of the professional competence of a bachelor's degree in Computer Science, which allows a university graduate to be modern and competitive in the labor market. The formation of this competence is effectively carried out on the basis of the implementation of two interrelated disciplines focused on the formation of theoretical knowledge and cognitive activity necessary for the study of object-oriented programming, as well as on the further study of a specific programming language and corresponding instrumental environments.